

Journal of Catalysis

EDITORS:

W. Keith Hall

Frank S. Stone

ASSOCIATE EDITOR:

Robert L. Burwell, Jr.

EDITORIAL BOARD:

R. B. Anderson

M. Boudart

J. B. Butt

A. Cimino

R. P. Eischens

P. C. Gravelle

G. L. Haller

J. W. Hightower

G. W. Keulks

H. Knözinger

M. Kraus

A. Nielsen

J. Rabo

J. F. Roth

W. M. H. Sachtler

J. J. F. Scholten

K. Tamaru

S. J. Thomson

P. B. Wells

J. T. Yates

Volume 92 • 1985



ACADEMIC PRESS, INC.

(Harcourt Brace Jovanovich, Publishers)

San Diego Orlando New York London

Toronto Montreal Sydney Tokyo

Copyright © 1985 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated, per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for creating new collective works, or for resale. Copy fees for pre-1985 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0021-9517/85 \$3.00

MADE IN THE UNITED STATES OF AMERICA

Contents of Volume 92

Number 1, March 1985

SHIRLEY S. CHAN, ISRAEL E. WACHS, LAWRENCE L. MURRELL, AND NICK C. DISPENZIERS, JR. Laser Raman Characterization of Tungsten Oxide Supported on Alumina: Influence of Calcination Temperatures	1
SHINRI SATO. Photoelectrochemical Preparation of Pt/TiO ₂ Catalysts	11
GLEN CONNELL AND J. A. DUMESIC. Migration of Potassium on Iron and Alumina Surfaces as Studied by Auger Electron Spectroscopy	17
S. M. GATES, J. N. RUSSELL, JR., AND J. T. YATES, JR. Reaction Kinetic Measurements on Single Crystal Catalysts: Methanol Decomposition on Ni(111).....	25
P. ARNOLDY, J. A. M. VAN DEN HEUKANT, G. D. DE BOK, AND J. A. MOULIJN. Temperature-Programmed Sulfiding of MoO ₃ /Al ₂ O ₃ Catalysts	35
R. R. CHIANELLI, A. F. RUPPERT, S. K. BEHAL, B. H. KEAR, A. WOLD, AND R. KERSHAW. The Reactivity of MoS ₂ Single Crystal Edge Planes	56
K. FOGER AND H. JAEGER. The Effect of Chlorine Treatment on the Dispersion of Platinum Metal Particles Supported on Silica and γ -Alumina	64
GIOVANNA GHIOTTI, FLORA BOCCUZZI, AND ROBERTO SCALA. Infrared Study of ZnO Surface Properties: CO Adsorption and CO/D ₂ Interaction at 77 K.....	79
K. B. JENSEN AND F. E. MASSOTH. Studies on Iron-Manganese Oxide Carbon Monoxide Catalysts. I. Structure of Reduced Catalyst	98
K. B. JENSEN AND F. E. MASSOTH. Studies on Iron-Manganese Oxide Carbon Monoxide Catalysts. II. Carburization and Catalytic Activity	109
J. R. MONNIER, M. J. HANRAHAN, AND G. APAI. A Study of the Catalytically Active Copper Species in the Synthesis of Methanol over Cu-Cr Oxide	119
JANET N. ALLISON AND WILLIAM A. GODDARD III. Oxidative Dehydrogenation of Methanol to Formaldehyde.....	127
R. J. WILLEY, W. C. CONNER, AND J. W. ELDRIDGE. Morphological Characterization of Etched Metal Catalysts	136
A. G. DHERE AND R. J. DE ANGELIS. <i>In Situ</i> X-Ray Diffraction Investigation of the Structural Characteristics of Two Co/ZSM-5 Catalysts	145
JOZSEF VALYON AND W. KEITH HALL. The Assay of Sulfided Molybdena-Alumina Catalysts.....	155
G. L. KELLOGG. The Oxidation of Rhodium Field-Emitter Surfaces during the CO Oxidation Reaction.....	167

NOTES

JONG S. CHUNG AND CARROLL O. BENNETT. On the Shift in the CH Stretching Bands of Methoxy Groups Chemisorbed on Metal Oxides	173
NORITETSU YOSHIDA, NAHOMI MATSUMOTO, AND SHOZO KISHIMOTO. Role of Hydrogen in Catalytic Decomposition of Ethylene on Nickel	177
C. B. LEE, E. M. CALVERLEY, AND R. B. ANDERSON. McCandlish Chain Growth Scheme.....	180
MASAHIRO KOBAYASHI. Production of Ru(CO) ₅ from Silica-Supported Ruthenium Catalysts Prepared by Cation Exchange	184
R. P. L. ABSIL, J. B. BUTT, AND J. S. DRANOFF. The Effects of Hydrogen on Cumene Disproportionation and Catalyst Deactivation on a Commercial Hydrocracking Catalyst.....	187

LETTERS TO THE EDITORS

JÓZSEF MARGITFALVI, EMILIA KERN-TÁLAS, AND PÉTER SZEDLACSEK. Contradictions in the Interpretation of Experimental Results Obtained upon High-Temperature Hydrogen Treatment of Supported Platinum Catalysts	193
KIMIO KUNIMORI AND TOSHIO UCHIJIMA. Metal-Support Interaction in Pt/Al ₂ O ₃ : Reply to Margitfalvi <i>et al.</i>	196

Number 2, April 1985

H. BRUMBERGER, F. DELAGLIO, J. GOODISMAN, M. G. PHILLIPS, J. A. SCHWARZ, AND P. SEN. Investigation of the SMSI Catalyst Pt/TiO ₂ by Small-Angle X-Ray Scattering	199
PANAYOTIS GEORGOPOULOS AND JEROME B. COHEN. Study of Supported Platinum Catalysts by Anomalous Scattering.	211
T. P. MOSER AND G. L. SCHRADER. Selective Oxidation of n-Butane to Maleic Anhydride by Model V-P-O Catalysts	216
KUEI-WU HUANG AND JOHN G. EKERDT. Alkyl and π -Allyl Intermediates in n-C ₄ Hydrocarbon Reactions over Ruthenium.	232
S. M. DAVIS, F. ZAERA, B. E. GORDON, AND G. A. SOMORJAI. Radiotracer and Thermal Desorption Studies of Dehydrogenation and Atmospheric Hydrogenation of Organic Fragments Obtained from [¹⁴ C]Ethylene Chemisorbed over Pt(111) Surfaces	240
WILLIAM C. HECKER AND ALEXIS T. BELL. Reduction of NO by H ₂ over Silica-Supported Rhodium: Infrared and Kinetic Studies	247
DAVID L. MYERS AND JACK H. LUNSFORD. Silica-Supported Chromium Catalysts for Ethylene Polymerization.	260
CHARLES T. CAMPBELL AND BRUCE E. KOEL. Chlorine Promotion of Selective Ethylene Oxidation over Ag(110): Kinetics and Mechanism.	272
A. CORMA, V. FORNÉS, AND E. ORTEGA. The Nature of Acid Sites on Fluorinated γ -Al ₂ O ₃	284
E. RUIZ-HITZKY AND B. CASAL. Epoxide Rearrangements on Mineral and Silica-Alumina Surfaces	291
K. AIKA, K. SHIMAZAKI, Y. HATTORI, A. OHYA, S. OHSHIMA, K. SHIROTA, AND A. OZAKI. Support and Promoter Effect of Ruthenium Catalyst. I. Characterization of Alkali-Promoted Ruthenium/Alumina Catalysts for Ammonia Synthesis	296
K. AIKA, A. OHYA, A. OZAKI, Y. INOUE, AND I. YASUMORI. Support and Promoter Effect of Ruthenium Catalyst. II. Ruthenium/Alkaline Earth Catalyst for Activation of Dinitrogen	305
R. E. HAYES, W. J. THOMAS, AND K. E. HAYES. A Study of the Nickel-Catalyzed Methanation Reaction	312
SUCHITA D. NAYAK, V. MAHADEVAN, AND M. SRINIVASAN. Hydrogenation of Alkenes and Alkynes Catalyzed by Polymer-Bound Palladium(II) Complexes	327
K. Y. S. NG AND E. GULARI. Molybdena on Titania. I. Preparation and Characterization by Raman and Fourier Transform Infrared Spectroscopy	340
G. M. KRAMER, G. B. MCVICKER, AND J. J. ZIEMIAK. On the Question of Carbo-nium Ions as Intermediates over Silica-Alumina and Acidic Zeolites	355
ROBERT B. GRANT AND RICHARD M. LAMBERT. A Single Crystal Study of the Silver-Catalysed Selective Oxidation and Total Oxidation of Ethylene	364

LIU FU AND CALVIN H. BARTHOLOMEW. Structure Sensitivity and Its Effects on Product Distribution in CO Hydrogenation on Cobalt/Alumina	376
JÁNOS SÁRKÁNY AND MIHÁLY BARTÓK. Investigation of Interactions between Metals and Adsorbed Organic Compounds in Infrared Spectroscopic Study of Adsorbed CO. III. Production of Desorption-Adsorption Infrared Doublet of CO on Pt/Cab-O-Sil and Interaction of Adsorbed CO with Hydrogen and Oxygen	388
J. ABBOT, A. CORMA, AND B. W. WOJCIECHOWSKI. The Catalytic Isomerization of 1-Hexene on H-ZSM-5 Zeolite: The Effects of a Shape-Selective Catalyst	398
ONNO L. J. GIJZEMAN. Surface Segregation in Alloys: Spheroidal Particles	409

NOTES

S. C. CHUANG, J. G. GOODWIN, JR., AND I. WENDER. Investigation by Ethylene Addition of Alkali Promotion of CO Hydrogenation on Rh/TiO ₂	416
M. JAYAMANI AND C. N. PILLAI. Reactions of Benzoin and Benzil over Alumina: Decarbonylation of α -Diketones	422
HARVEY G. STENGER, JR. Distributed Chain Growth Probabilities for the Fischer-Tropsch Synthesis	426
W. M. H. SACTLER, D. F. SHRIVER, W. B. HOLLENBERG, AND A. F. LANG. Promoter Action in Fischer-Tropsch Catalysis	429
NABIN K. NAG. Characterization of Mo/Al ₂ O ₃ Catalysts by Low-Temperature Oxygen Chemisorption	432
AUTHOR INDEX FOR VOLUME 92	438

The Subject Index for Volume 92 will appear in the December 1985 issue as part of a cumulative index for the year 1985.

